QUARTERLY REPORT

CONSOLIDATED WATER TREATMENT FACILITY
AND
OU7 PASSIVE SEEP INTERCEPTION AND TREATMENT SYSTEM

FOR JULY THROUGH SEPTEMBER 1999

Rocky Mountain Remediation Services, L.L.C.

OCTOBER 1999

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1.0 INTRODUCTION

The CWTF went on-line February 29, 1996. The CWTF was designed as a comprehensive facility which combined individual IM/IRA treatment activities in order to reduce cost, increase efficiency, and offer treatment options to the Rocky Flats Environmental Technology Site (RFETS) in support of on-going Environmental Restoration (ER) activities and remediation.

The Consolidated Water Treatment Facility (CWTF) consists of the following specific unit operations:

- Chemical precipitation (T-900A/T-900B);
- Cross-flow membrane microfiltration (T-900A/T-900B);
- Ultraviolet Light/Hydrogen Peroxide Oxidation (Building 891);
- Granular Activated Carbon (Building 891); and
- Ion Exchange (Building 891).

A clay absorbent media drum is available for a pretreatment of oily wastewaters during water transfers from tanker trucks to influent storage tanks. Waters are processed through the various CWTF unit treatment operations based on knowledge of the influent water characteristics in order to maximize treatment and reduce handling costs and waste generation.

The CWTF currently treats contaminated water from the following sources:

- Operable Unit 1 (OU1) groundwater (Collection Well and French Drain);
- Decontamination water from the Main Decontamination Facility (MDF) and Protected Area Decontamination Facility (PADF); and
- Other ER waters (e.g., purge water, water pumped from containments, etc.)

The CWTF flowpath is flexible enough to allow waters to be treated through particular unit processes as necessary and to allow for re-treatment if necessary.

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SECTION A - CONSOLIDATED WATER TREATMENT FACILITY (CWTF)

2.0 CWTF OPERATIONS (July through September 1999)

2.1 QUANTITIES OF WATER COLLECTED AND TREATED

Table 2-1 and Table 2-2 summarize the quantities of water collected and treated at the CWTF for the period of July through September 1999. During this period, the CWTF accepted approximately 65,900 gallons of water from the following sources:

- OU1 French Drain Sump
- OU1 Collection Well
- Snow melt/rain water pumped from CWTF containments
- MDF and PADF Water
- 903 Pad Decontamination Activities
- B881 Roof leak
- Groundwater Monitoring Well Purge
- Plant Power

Table 2-2 shows that a total of approximately 72,000 gallons of water were treated through the Building 891 Ion Exchange Columns from July 1, 1999 through September 30, 1999. Approximately 77,000 gallons of the total water volume were treated through the chemical precipitation/microfiltration trailers and approximately 72,000 gallons were treated through the Ultraviolet/Hydrogen Peroxide Oxidation System.

Please note that because the CWTF is equipped with three influent tanks, the amount of water treated may be less than or greater than the amount of water collected for any given period.

There were approximately 115,000 gallons of treated water released to the South Interceptor Ditch (SID) during the period of July through September, 1999.

As of September 30, 1999, the total water processed through the Ion Exchange Columns is approximately 4,942,601 gallons.

Table 2-1
Consolidated Water Treatment Facility
Approximate Quantities of Water Collected a/

Month/Year	Gallons Collected from the OU1 French Drain Sump b/	Gallons Collected from the OU1 Collection Well b/	Gallons Accepted at Bldg 891 from MDF and PADF	Gallons Pumped from Bldg. 891 Containments	Gallons Accepted at Bldg 891 Collected from Other Sources c/	Total Gallons Collected from all Sources
Jan-99	9,360.0	890.0	0.0	1,240.0	220.0	11,710.0
Feb-99	4,740.0	1,125.0	0.0	380.0	370.5	6,615.5
Mar-99	3,870.0	1,015.0	0.0	1,890.0	15,533.0	22,308.0
1st Quarter Totals	17,970.0	3,030.0	0.0	3,510.0	16,123.5	40,633.5
Apr-99	8,400.0	900.0	2,892.0	22,274.0	11,484.0	45,950.0
May-99	41,657.0	1,170.0	0.0	8,216.0	3,450.3	54,493.3
Jun-99	15,640.0	1,625.0	0.0	4,330.0	3,136.0	24,731.0
2nd Quarter Totals	65,697.0	3,695.0	2,892.0	34,820.0	18,070.3	125,174.3
Jul-99	7,850.0	1,200.0	2,000.0	3,530.0	4,220.0	18,800.0
Aug-99	10,200.0	1,180.0	3,850.0	9,120.0	2,455.1	26,805.1
Sep-99	5,580.0	1,375.0	8,317.0	4,410.0	570.0	20,252.0
3rd Quarter Totals	23,630.0	3,755.0	14,167.0	17,060.0	7,245.1	65,857.1
Oct-99	0.0	0.0	0.0	0.0	0.0	0.0
Nov-99	0.0	0.0	0.0	0.0	0.0	0.0
Dec-99	0.0	0.0	0.0	0.0	0.0	0.0
4th Quarter Totals						
Year-to-Date Totals	107,297.0	10,480.0	17,059.0	55,390.0	41,438.9	231,664.9

a/ Please note that because the CWTF is equipped with influent tanks, the quantity of water collected will not necessarily equate to the quantity of water processed. Also note that a 15,000 gallon surge tank (T-203) is in-line between the UV/GAC unit processes and IX #1, and therefore the quantity of water processed through UV/GAC will not equate to the quantity of water processed through IX.

b/ This ground water is generally collected each operating day (i.e., 5 days per week).

c/ Other sources may include purge water, ER Accelerated Action Project water, 903 Pad Decon, etc.

Table 2-2
Consolidated Water Treatment Facility
Approximate Quantities of Water Processed and Retreated a/

Month/Year	Gallons Processed through T900A/T900B	Gallons Retreated through T900A/T900B	Gallons Processed through UV/H2O2	Gallons Retreated through UV/H2O2	Gallons Processed through IX	Gallons Retreated through IX
Jan-99	12,527	0	8,855	0	3,742	0
Feb-99	12,190	0	16,830	0	16,830	0
Mar-99	12,476	9,685	12,128	0	19,601	0
1st Quarter Totals	37,193	9,685	37,813	0	40,173	0
Apr-99	49,685	0	46,416	0	46,250	0
May-99	62,501	0	64,441	0	64,302	0
Jun-99	21,520	0	20,146	0	14,409	0
2nd Quarter Totals	133,706	0	131,003	0	124,961	0
Jul-99	24,965	0	16,707	0	16,102	0
Aug-99	24,520	0	31,160	0	33,586	0
Sep-99	27,596	0	24,374	0	22,250	0
3rd Quarter Totals	77,081	0	72,241	0	71,938	0
Oct-99	0	0	0	0	0	0
Nov-99	0	0	0	0	0	0
Dec-99	0	0	0	0	0	0
4th Quarter Totals						
Year-to-Date Totals	247,980	9,685	241,057	0	237,072	0

a/ Please note that because the CWTF is equipped with influent tanks, the quantity of water collected will not necessarily equate to the quantity of water processed. Also note that a 15,000 gallon surge tank (T-203) is in-line between the UV/GAC unit processes and IX #1, and therefore the quantity of water processed through UV/GAC will not equate to the quantity of water processed through IX.

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY (CWTF)

2.2 CHEMICAL USAGE

The following chemicals are utilized during wastewater treatment operations at the CWTF:

- Building 891
  - Hydrogen peroxide (UV oxidation)
  - Hydrochloric acid (ion exchange regeneration and pH adjustment)
  - Sodium hydroxide (ion exchange regeneration)

- T-900A/T-900B trailers
  - Sulfuric acid (pH adjustment: TK-1 and effluent)
  - Calcium hydroxide (precipitation)
  - Ferric sulfate (precipitation)
  - Hydrogen peroxide (chemical cleaning of filter modules)
  - Sodium hydroxide (pH adjustment: TK-2)

Table 2-3 summarizes the quantities of chemicals utilized during the third quarter of 1999.

2.3 WASTE GENERATION

The following types of waste are generated during normal wastewater treatment operations at Building 891 and the T-900A/T-900B trailers:

- Building 891
  - Used filter socks
  - Neutralized ion exchange regenerant
  - Personnel protective equipment
  - Clay filter media

- T-900A/T-900B trailers
  - Filter press sludge cake
  - Personnel protective equipment
  - Used filter membranes

Table 2-4 summarizes the types and quantities of the waste generated during wastewater treatment operations at the CWTF for the third quarter of 1999. From July 1, 1999 through September 30, 1999, approximately 4,400 gallons of neutralized regenerant water from Tank 210 were sent to the Building 374 evaporator for processing.

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Table 2-4
Consolidated Water Treatment Facility
Approximate Quantities of Waste Generated

	Building 891			T-900A/T-900B			Bldg 891/T-900A/T-900B
Month/Year	Filter Socks (55-gal drum)	Neutralized Regenerant to 374 (gallons)	Spent Media (drums)	Sludge Production (55-gal drum)	Spent GAC (pounds)	Used Filter Membranes (55-gal drum)	Personal Protective Equip. (55-gal bag)
Jan-99	0	0	0	0	0	0	0
Feb-99	0	4,587	0	3	0	0	0
Mar-99	0	4,715	0	0	0	0	0
1st Quarter Totals	0 a/	9,302	0	3	0	0	0
Apr-99	0	0	0	0	0	0	0
May-99	0	4,713	0	3	0	0	0
Jun-99	0	0	0	0	0	0	0
2nd Quarter Totals	0 a/	4,713	0	3	0	0	0
Jul-99	0	4,450	0	0	0	0	1
Aug-99	0	0	0	3	0	0	1
Sep-99	0	0	0	0	0	0	1
3rd Quarter Totals	0 a/	4,450	0	3	0	0	3
Oct-99	0	0	0	0	0	0	0
Nov-99	0	0	0	0	0	0	0
Dec-99	0	0	0	0	0	0	0
4th Quarter Totals	0 a/	0	0 0	0	0	0	0
Year-to-Date Totals	0	18,465	0	9	0	0	3

Table 2-3
Consolidated Water Treatment Facility
Approximate Quantities of Chemicals Used for Treatment a/

	Building 891			T-900A/T-900B				
Month/Year	Hydrochloric Acid 36% (gallons)	Sodium Hydroxide 50% (gallons)	Hydrogen Peroxide 50% (gallons)	Sulfuric Acid a/ 98% (gallons)	Calcium Hydroxide (pounds)	Ferric Sulfate (pounds)	Hydrogen Peroxide 35% (gallons)	Sodium Hydroxide 50% (gallons)
Jan-99	134.00	70.00	0.50	4.18	39.00	10.00	4.80	1.90
Feb-99	161.00	43.00	0.66	1.59	36.00	10.00	5.20	2.00
Mar-99	0.00	94.00	0.88	1.15	27.00	21.00	2.40	1.50
1st Quarter Totals	295.00	207.00	2.04	6.92	102.00	41.00	12.40	5.40
Apr-99	95.00	48.00	1.07	3.35	75.00	37.00	10.60	0.4
May-99	0.00	0.00	3.03	8.00	183.00	40.00	14.20	0.0
Jun-99	177.00	65.00	1.01	1.91	81.00	13.00	5.30	5.00
2nd Quarter Totals	272.00	113.00	5.11	13.26	339.00	90.00	30.10	5.40
Jul-99	0.00	0.00	0.95	2.87	126.00	16.00	5.60	10.02
Aug-99	0.00	30.00	1.50	2.38	72.00	12.00	5.40	7.54
Sep-99	0.00	95.00	1.50	3.50	78.00	17.00	5.80	8.30
3rd Quarter Totals	0.00	125.00	3.95	8.75	276.00	45.00	16.80	25.86
Oct-99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nov-99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dec-99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4th Quarter Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Year-to-Date Totals	567.00	445.00	11.10	28.93	717.00	176.00	59.30	36.66

a/ In addition to the sulfuric acid quantity listed in this column, occasionally a small amount (approximately 1 gallon per effluent tank) of sulfuric acid is used in Building 891 for effluent pH adjustment.

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SECTION A - CONSOLIDATED WATER TREATMENT FACILITY (CWTF)

3.0 INFLUENT AND EFFLUENT SAMPLING (July through September 1999)

3.1 OU1 FRENCH DRAIN SUMP, COLLECTION WELL AND BUILDING 881 FOOTING DRAIN CHARACTERISTICS

Collection Well water is now collected separately from the French Drain Sump water, and collection and treatment of water from the Building 881 Footing Drain was discontinued in December 1994. Therefore the current French Drain Sump data is representative of only those waters that seep from the groundwater table into the French Drain. Quarterly sampling was performed at the French Drain Sump on August 9, 1999. The Collection Well was sampled on August 26, 1999. The Building 881 Footing Drain was sampled on August 9, 1999. The groundwater group is conducting the sampling. The results of the sampling are reported in the Quarterly Groundwater Report.

3.2 OU2 SURFACE WATER CHARACTERISTICS

Collection of water from SW-59 was stopped on June 25, 1998, due to the installation of the Mound plume treatment system. Effective May 6, 1994, the collection and treatment of SW-61 and SW-132 was discontinued as per the authorization obtained on July 24, 1994 from the Environmental Protection Agency (EPA) and the Colorado Department of Public Health and the Environment (CDPHE). Surface water is sampled on a quarterly basis from SW-61 and SW-132. The surface water group collected samples from SW-61 and SW-132 on August 24, 1999. The results of sampling from these locations are reported in the Quarterly Environmental Monitoring Report.

3.3 TREATED EFFLUENT CHARACTERISTICS

Treated effluent from the CWTF is stored in one of three effluent storage tanks prior to discharge. An effluent storage tank is sampled and is discharged if the analytical results show that ARARs have not been exceeded. There were 115,000 gallons of water discharged during the third quarter of 1999.

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY (CWTF)

4.0 ENVIRONMENTAL COMPLIANCE

4.1 PERIODS OF NON-COLLECTION

All collections were performed for the third quarter of 1999.

4.2 AIR MONITORING

Air monitoring was performed with no readings found above action levels during process runs and transfers of incidental waters.

SECTION A - CONSOLIDATED WATER TREATMENT FACILITY (CWTF)

5.0 ANTICIPATED OPERATIONS FOR NEXT QUARTER

Collection and treatment of water from the French Drain Sump will continue as normal. Water from the Collection Well will continue to be collected using the portable trailer and transported to the CWTF for off-loading and treatment. Purge, incidental and decontamination pad waters will continue to be accepted and treated.

The CWTF will continue to accept and treat waters from Environmental Restoration Projects. Projects being supported with water treatment activities include the East Trenches Project, the Building 881 roof leak and various site-wide pits and vaults.

The work package for installation of a new acid tank level detection system was finalized and approved on September 29, 1999. Installation of the new system will take place in December, 1999 or January, 2000.

Sampling of OU1 and OU2 locations will continue to be performed by groundwater and surface water groups.

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SECTION B - OU7 PASSIVE SEEP INTERCEPTION AND TREATMENT SYSTEM (PSITS)

6.0 INTRODUCTION, OPERATIONS, AND SAMPLING

The OU7 Passive Seep Interception and Treatment System (PSITS) is designed to collect and treat OU7 seep water and thereby eliminate, to the extent practicable, the discharge of the FO39-listed waste contained in this seep water to the East Landfill Pond. The OU7 Treatment system was modified in the fourth quarter of 1998 to allow passive aeration of OU7 waters. The waters exit the landfill and flow through existing piping without GAC treatment. The water is piped to land surface and flows over stepped flagstones and a gravel bed. The collection and treatment system is comprised of the following items:

- A seep interception system.
- A settling basin to remove total suspended solids.
- Stepped flagstones and a gravel bed to encourage volatilization of contaminants.

The water before and after aeration will be sampled monthly for volatile and semivolatile organic compounds. The effluent will also be sampled monthly for metals (including mercury), isotopic plutonium, uranium and americium, gross alpha and beta, and tritium.

The bag filtration system and the GAC vessels went offline on October 23, 1998 as a result of modifications to the OU7 collection and treatment system. Filter socks and GAC media were packaged according to the Waste Generating Instructions.

There were no periods of system bypass during the third quarter of 1999. The EPA and CDPHE will be notified immediately in any instance where bypass continues longer than 72 hours. Periods of bypass less than 72 hours will be documented in this report.

Samples for the third quarter were collected at the landfill outfall (SW00196) on July 6, August 16, September 7, 1999. Results from the second quarter sampling were evaluated against the treatment standard. All results were below the treatment standard except the following:

Date	Analyte	Result (ug/L)	Standard (ug/L)
4/12/99	Benzene	2	1
4/12/99	Aluminum*	135 (total)	87 (dissolved)
6/7/99	Aluminum*	122 (total)	87 (dissolved)

*It is uncertain whether Aluminum meets standards. The results are reported for total and the standard is for dissolved.

Approximately 456,900 gallons of water were treated through the OU7 Treatment System from July 1, 1999 through September 30, 1999.